Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Adult trauma care: percentage of injured patients age 18 years and older admitted to the ED who satisfy local trauma team activation (TTA) guidelines and for whom there is a TTA.

Source(s)

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percentage of injured patients age 18 years and older admitted to the emergency department (ED) who satisfy local trauma team activation (TTA) guidelines and for whom there is a TTA (per 100 patients).

Rationale

Each year, injuries affect 700 million people worldwide and result in more than five million deaths. In many countries, injuries are the leading cause of death among those under the age of 45 years. The human and societal burden is even greater with many survivors never returning to school, work or their "regular" lives.

Health care services provide patients with treatment for what is a major cause of morbidity and death. Yet medical errors and substandard care threaten trauma care. Half of all patients with major traumatic injuries do not receive recommended care, medical errors are common in critically ill trauma patients and

preventable trauma deaths in hospital are widely reported. The World Health Organization (WHO), professional trauma organizations (e.g., American College of Surgeons [ACS], Trauma Association of Canada and Royal Australasian College of Surgeons) and accreditation bodies have promoted efforts to improve the quality of care delivered to injured patients. However, before the quality of injury care can be improved, it needs to be measured using reliable and valid measures of health care quality.

These indicators can be used to assess patient safety, and to evaluate and improve quality of care by incorporating these measures into local, regional or national quality improvement efforts. Implementing a consistent approach to measurement (same indicators, same definitions, same data elements, same reporting format) would provide institutions with reliable performance data that is necessary for surveillance (e.g., tertiary survey completion), to track local problems (e.g., adverse events – specifically missed injuries), evaluate the effects of interventions or program changes (e.g., tertiary survey protocol) and provide comparisons across centers (e.g., benchmarking adverse events using programs such as the ACS's Trauma Quality Improvement Program). Well-designed, carefully evaluated and appropriately implemented quality indicators (QIs) may be essential tools for guiding efforts to improve health and healthcare.

This indicator is intended to monitor trauma team activation (TTA) and identify deviations from local guidelines that warrant individual patient review.

Evidence for Rationale

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

Primary Health Components

Trauma care; injury; trauma team activation (TTA)

Denominator Description

All injured patients age 18 years and older admitted to the emergency department (ED) who satisfy local trauma team activation (TTA) guidelines (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

All injured patients age 18 years and older admitted to the emergency department (ED) who satisfy local trauma team activation (TTA) guidelines AND for whom there is a TTA

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

One study showed that Glasgow Coma Scale (GCS) less than 8 and systolic blood pressure (SBP) less than 90 mmHg were predictors of mortality and should be taken into consideration for trauma team activation (TTA) in cases of adult blunt trauma (Cherry et al., 2008). Franklin et al. (2000) showed that prehospital hypotension (SBP less than 90 mmHg) remains a valid indicator for TTA. Sava et al. (2002) suggested the addition of truncal gunshot to TTA criteria. One study described how a 3-tiered TTA protocol allowed for safe patient care with improved utilization of hospital resources (Claridge et al., 2010). Another study suggested that age greater than or equal to 70 years alone should be a criterion for TTA (Demetriades et al., 1998). Rainer et al. (2007) suggested that compliance with TTA protocols optimized process of care and improved survival. For the most part, studies in the literature have evaluated criteria incorporated into the field triage decision scheme proposed by the Centers for Disease Control and Prevention (CDC) (2011; Sasser et al., 2009). Age, GCS, SBP, ISS and level of trauma care have been employed as variables for risk adjustment in studies examining this indicator for tiered TTA protocols (Davis et al., 2010). Willis et al. (2008) demonstrated that this quality indicator was associated with reduced risk of ICU admission, but was not associated with hospital mortality.

Evidence for Additional Information Supporting Need for the Measure

Centers for Disease Control and Prevention (CDC). Field triage: guidelines for the field triage of injured patients. [internet]. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2011 [accessed 2012 Jul 08].

Cherry RA, King TS, Carney DE, Bryant P, Cooney RN. Trauma team activation and the impact on mortality. J Trauma. 2007 Aug;63(2):326-30. PubMed

Claridge JA, Golob JF, Leukhardt WH, Kan JA, Como JJ, Malangoni MA, Yowler CJ. Trauma team activation can be tailored by prehospital criteria. Am Surg. 2010 Dec;76(12):1401-7. PubMed

Davis T, Dinh M, Roncal S, Byrne C, Petchell J, Leonard E, Stack A. Prospective evaluation of a two-tiered trauma activation protocol in an Australian major trauma referral hospital. Injury. 2010 May;41(5):470-4. PubMed

Demetriades D, Chan LS, Velmahos G, Berne TV, Cornwell EE, Belzberg H, Asensio JA, Murray J, Berne J, Shoemaker W. TRISS methodology in trauma: the need for alternatives. Br J Surg. 1998 Mar;85(3):379-84. PubMed

Franklin GA, Boaz PW, Spain DA, Lukan JK, Carrillo EH, Richardson JD. Prehospital hypotension as a valid indicator of trauma team activation. J Trauma. 2000 Jun;48(6):1034-7; discussion 1037-9. PubMed

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

Rainer TH, Cheung NK, Yeung JH, Graham CA. Do trauma teams make a difference? A single centre registry study. Resuscitation. 2007 Jun;73(3):374-81. PubMed

Sasser SM, Hunt RC, Sullivent EE, Wald MM, Mitchko J, Jurkovich GJ, Henry MC, Salomone JP, Wang SC, Galli RL, Cooper A, Brown LH, Sattin RW, National Expert Panel on Field Triage, Centers for Disease Control and Prevention. Guidelines for field triage of injured patients. Recommendations of the National Expert Panel on Field Triage. MMWR Recomm Rep. 2009 Jan 23;58(RR-1):1-35. [160 references] PubMed

Sava J, Alo K, Velmahos GC, Demetriades D. All patients with truncal gunshot wounds deserve trauma team activation. J Trauma. 2002 Feb;52(2):276-9. PubMed

Willis CD, Stoelwinder JU, Cameron PA. Interpreting process indicators in trauma care: construct validity versus confounding by indication. Int J Qual Health Care. 2008 Oct;20(5):331-8. PubMed

Extent of Measure Testing

Using a modification of the RAND/University of California, Los Angeles (UCLA) Appropriateness Methodology, a panel of 19 injury and quality of care experts serially rated and revised quality indicators identified from a systematic review of the literature and international audit of trauma center quality improvement practices. The quality indicators developed by the panel were sent to 133 verified trauma centers in the United States, Canada, Australia, and New Zealand for evaluation.

A total of 84 quality indicators were rated and revised by the expert panel over 4 rounds of review producing 31 quality indicators of structure (n=5), process (n=21), and outcome (n=5), designed to assess the safety (n=8), effectiveness (n=17), efficiency (n=6), timeliness (n=16), equity (n=2), and patient-centeredness (n=1) of injury care spanning prehospital (n=8), hospital (n=19), and posthospital (n=2) care and secondary injury prevention (n=1). A total of 101 trauma centers (76% response rate) rated the indicators (1=strong disagreement, 9=strong agreement) as targeting important health improvements (median score 9, interquartile range [IQR] 8 to 9), easy to interpret (median score 8, IQR 8 to 9), easy to implement (median score 8, IQR 7 to 8), and globally good indicators (median score 8, IQR 8 to 9).

Thirty-one evidence-informed quality indicators of adult injury care were developed, shown to have content validity, and can be used as performance measures to guide injury care quality improvement practices.

Trauma centers rated the indicator "percentage of injured patients age 18 years and older admitted to the emergency department (ED) who satisfy local trauma team activation (TTA) guidelines and for whom there is a TTA" as targeting important health improvements (median score 9, IQR 8 to 9), easy to interpret (median score 9, IQR 7 to 9), easy to implement (median score 8, IQR 7 to 9), and globally a good indicator (median score 9, IQR 8 to 9).

Evidence for Extent of Measure Testing

Santana MJ, Stelfox HT, Trauma Quality Indicator Consensus Panel. Development and evaluation of evidence-informed quality indicators for adult injury care. Ann Surg. 2014 Jan;259(1):186-92. [35 references] PubMed

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Emergency Department

Hospital Outpatient

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Age greater than or equal to 18 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

Unspecified

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Encounter

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

All injured patients age 18 years and older admitted to the emergency department (ED) who satisfy local trauma team activation (TTA) guidelines*

*Ideally local TTA guidelines should be employed. Alternatively presence of physiological compromise (respiratory rate [RR] less than 10 or greater than 29 breaths per minute or intubated or Glasgow Coma Scale [GCS] less than 9 or systolic blood pressure [SBP] less than 90 mmHg) or a major anatomic injury (penetrating injury to head, neck, torso, extremities proximal to elbow or knee, flail chest, greater than or equal to 2 proximal long-bone fractures, crush, degloved or mangled extremity, amputation proximal to wrist and ankle, pelvic fracture, open or depressed skull fracture, paralysis) derived from the field triage published by the Centers for Disease Control and Prevention (CDC) may be employed.

Exclusions

Unspecified

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

All injured patients age 18 years and older admitted to the emergency department (ED) who satisfy local trauma team activation (TTA) guidelines AND for whom there is a TTA

Exclusions

Unspecified

Numerator Search Strategy

Encounter

Data Source

Paper medical record

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Trauma team activation (TTA).

Measure Collection Name

Quality Indicators in Adult Trauma Care

Measure Set Name

Hospital Indicators

Submitter

Quality of Trauma in Adult Care (QTAC) Team, University of Calgary - Academic Institution

Developer

Quality of Trauma in Adult Care (QTAC) Team, University of Calgary - Academic Institution

Funding Source(s)

The project was supported by a Partnerships in Health System Improvement Grant (PHE-91429) from the Canadian Institutes of Health Research and Alberta Innovates Health Solutions. Funding sources had no role in the design, conduct, or reporting of this study.

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- Diane Lorenzetti, Library Science, University of Calgary
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Expert Panel

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Financial Disclosures/Other Potential Conflicts of Interest

The project was supported by a Partnerships in Health System Improvement Grant (PHE-91429) from the Canadian Institutes of Health Research and Alberta Innovates Health Solutions. Dr Stelfox was supported by a New Investigator Award from the Canadian Institutes of Health Research and a Population Health Investigator Award from Alberta Innovates Health Solutions. Funding sources had no role in the design, conduct, or reporting of this study. The authors declare no conflicts of interest.

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2013 Jan

Measure Maintenance

Unspecified

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

Measure Availability

Source available from the Quality of Trauma in Adult Care (QTAC) Web site .

This work is also available from the Annals of Surgery Web site : Santana MJ, Stelfox HT, Trauma Quality Indicator Consensus Panel. Development and evaluation of evidence-informed quality indicators for adult injury care. Ann Surg. 2014 Jan;259(1):186-92.

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NQMC Status

This NQMC summary was completed by ECRI Institute on May 11, 2015. The information was verified by the measure developer on July 13, 2015.

Copyright Statement

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Production

Source(s)

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

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